

**AME-201 Statics**  
**Fall 2010**

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<b>Office Hours</b>	TTh 1230 – 130 PM and by appointment, RRB 202		
<b>Teaching Assistant</b>	Shibing Liu	<a href="mailto:shibingl@usc.edu">shibingl@usc.edu</a>	(Office hours tbd)
<b>Textbook</b>	Beer, F. and E. Johnston. <u>Vector Mechanics for Engineers: Statics</u> , 9 <sup>th</sup> Edition. McGraw-Hill, Boston, 2009. ISBN-10: 007727556X; ISBN-13: 978-0077275563.		

**Course Description**

<b>AME-201 STATICS</b>	<b>TTh 11:00 AM to 12:20 PM, SOS B46</b>		
Units: 3	<i>Prerequisite:</i> MATH-125	<i>Recommended preparation:</i> AME-101, PHYS-151	

The subject of Statics deals with forces acting on rigid bodies at rest covering coplanar and non-coplanar forces, concurrent and non-concurrent forces, friction forces, centroid and moments of inertia. Much time will be spent finding resultant forces for a variety of force systems, as well as analyzing forces acting on bodies to find the reacting forces supporting those bodies. Students will develop critical thinking skills necessary to formulate appropriate approaches to problem solutions.

**Course Objectives**

Throughout the semester students will develop an understanding of, and demonstrate their proficiency in the following concepts and principles pertaining to vector mechanics, statics.

1. Components of a force and the resultant force for a systems of forces
2. Moment caused by a force acting on a rigid body
3. Principle of transmissibility and the line of action
4. Moment due to several concurrent forces
5. Force and moment reactions at the supports and connections of a rigid body
6. Force in members of a truss using the Method of Joints and the Method of Sections
7. Shear and bending moment diagrams
8. Centroid and center of gravity for a rigid body
9. Moment of inertia or radius of gyration of a composite area

**Instructor Objectives**

1. Provide the best learning environment and technical education needed to achieve the student objectives listed above and for a career in engineering
2. Emphasize the understanding of societal implications of engineering decisions
3. Encourage class participation, questions and class related discussions
4. Incite critical analysis in the solution of a problem and application to engineering
5. Keep students informed of their progress during the semester
6. Provide support inside and outside the classroom
7. Demonstrate fairness in grading

**Grading**

HW Assignments	15%	13 assignments, ~4 graded
Quizzes	30%	8 quizzes, all graded
Midterm	25%	Thursday, Oct. 14 <sup>th</sup>
Final Exam	30%	Tuesday, Dec. 14 <sup>th</sup> , 8-10 AM, location tbd

In order to receive credit for your work, all homework, quiz and exam problems **must** be presented in a clear, organized manner. Solutions **must** show evidence of work; “magic” answers will not be accepted. Partial credit may be given if the solution is presented in a logical fashion. Students may work together on the assigned HW sets only; however, each person must submit their own assignment. All quizzes, the midterm and final exam are to be completed **individually**. Failure to comply with this requirement will result in a failing grade for the course. All students should read and understand the USC Statement of Academic Integrity provided below.

**HW Assignments:** A total of thirteen (13) homework sets will be assigned throughout the semester. Assignments will be announced during lecture and (unless stated otherwise) are “due” one week later, **before** the start of class (*i.e.*, before 11 AM). A hard copy of your work must be submitted in order to receive credit; scanned/faxed/mailed submissions will not be accepted. Late submissions will be penalized **-10%/day (including weekends)** and can be no later than five (5) days late. The number of assignments submitted for a grade will depend on the progress made and proficiency demonstrated in the quizzes. *You are expected to complete ALL assignments within the time allotted since the problems contained within the assignments will be closely related to the quiz given that week.*

**Quizzes:** There will be eight (8) closed note/book quizzes, each starting promptly at 11 AM during the Thursday lecture period. *The material for each quiz will reflect the homework set “due” on that day.* Not taking a quiz will result in a zero (0) if your absence is not supported, documented and excused (*i.e.*, medical, court, etc.). If you miss a quiz due to an acceptable, documented reason the percentage of your final grade corresponding to the missed quiz (*i.e.*, 3.75% per quiz) will be added to the Final Exam. **No Makeup Tests Will Be Performed.**

**Midterm:** There will be one (1) midterm exam on Thursday, October 14<sup>th</sup>. Students may bring one hand-written 8.5” x 11” note sheet to the midterm.

**Final Exam:** The Final Exam will be given on Tuesday, December 14<sup>th</sup> from 8 – 10 AM. The location of this exam is to be determined. The Final Exam will be an “open note” test where **only** your class notes, homework assignments and quizzes may be referenced (but not your text book).

**Calculators:** Standard scientific calculators are allowed for use during all quizzes, the midterm and the final. Programmable calculators and wireless devices (*e.g.*, cell phone, iPod/Pad, etc.) are not permitted.

*\*The guidelines presented in this syllabus are subject to change at the discretion of the instructor*

### **Statement for Students with Disabilities**

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

### **Statement on Academic Integrity**

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. All students are expected to understand and abide by these principles. *SCampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

## Class Schedule

Topics are indicated as a general guide. Coverage and schedule may change in accordance with the class progress. The column titled "Reading" details the chapter sections that will be discussed during the corresponding lecture.

DATE	TOPIC	READING
24-Aug	<i>Class Introduction, Statics of Particles</i>	2.1-6
26-Aug		2.7-11
31-Aug		2.12-14
2-Sep		2.15
7-Sep	Rigid Bodies: Equivalent System of Forces	3.1-8
9-Sep		<b>3.9-11</b>
14-Sep		3.12-16
16-Sep		3.17-20
21-Sep	Equilibrium of Rigid Bodies	4.1-4
23-Sep		4.5
28-Sep		4.6-7
30-Sep		<b>4.8-9</b>
5-Oct	Centroids and Centers of Gravity	5.1-5
7-Oct		5.6-7
12-Oct		5.10-12
<b>14-Oct</b>	<b>Midterm</b>	<b>Ch. 2 - 5</b>
19-Oct	Analysis of Structures	6.1-4
21-Oct		6.7
26-Oct		6.9-11
28-Oct		<b>6.9-11</b>
2-Nov		6.12
4-Nov		6.1-12
9-Nov	Forces in Beams and Cables	7.1-2
11-Nov		<b>7.3-5</b>
16-Nov		7.6
18-Nov	Friction	8.1-4
23-Nov		<b>8.5-6</b>
25-Nov	<i>Thanksgiving Break</i>	
30-Nov	Moments of Inertia	9.1-5
2-Dec		9.6-7
<b>14-Dec</b>	<b>Final Exam (8-10 AM, location tbd)</b>	<b>Ch. 6 - 9</b>